

INDUSTRIAL EDUCATION



ALBERTA KIDS



SPECIAL EDITION

FEBRUARY 1979
VOL. XI NO. 2

Alberta
EDUCATION

CURRICULUM

T
77
A3
A33
1979
gr.1-12

ALTA
373.196
1979
Gr.1-12

CURRGDHT

CURR

Preface

The Industrial Education Newsletter is a regular publication that is sent to all Alberta Industrial Education teachers, principals and superintendents. Its purpose is to help keep these people informed about developments in the field.

This is a special issue. The invitation from the American Industrial Arts Association to outline the Alberta Industrial Education program to the delegates at their convention in San Antonio, Texas, in February 1979, stimulated our teachers to request a special edition that would describe the practical arts as they relate to technical education. The

result is this document. It is a cooperative project, with most of the articles written by teachers or supervisors and the publication done by Alberta Education.

As one reads through the document, a picture should emerge that describes the industrial education program from a person's birth to death. All facets are alluded to: elementary integrated practical activities, junior high school awareness and exploration, senior high school orientation and preparation, post high school preparation, and finally, work-production-fulfillment.

Contents

ALBERTA'S KIDS BACKGROUNDER	2
ORGANIZATION FOR EDUCATION	4
INTEGRATED PRACTICAL ACTIVITIES	6
THE ALBERTA INDUSTRIAL EDUCATION PROGRAM Grades 7 - 9 (Junior High School)	8
THE HIGH SCHOOL PROGRAM	10
THE ALBERTA INDUSTRIAL EDUCATION PROGRAM 10-20-30 (Senior High School)	10
THE ALBERTA INDUSTRIAL EDUCATION PROGRAM 12-22-32	13
SPECIAL PROGRAMS IN VOCATIONAL EDUCATION	15
LIVING VOCATIONAL SKILLS	15
WORK EXPERIENCE EDUCATION IN ALBERTA	17
PROFESSIONAL ORGANIZATIONS	19
WHERE TO NOW?	20

Acknowledgements

Many people contributed to this special issue of the Industrial Education Newsletter.

Many people contributed to this special issue of the Industrial Education Newsletter.

About the Authors:

Dr. A. Morris
Coordinator of Vocational and Living Skills, Calgary Board of Education

Dr. J. D. Harder
Associate Director of Curriculum, Alberta Education

Mrs. Norreen Baker
Principal of Haddon Road Elementary School, Calgary

Mr. Jack C. Smith
Consultant for Industrial Education, Alberta Education

Mr. John Shore
Outdoor and Industrial Education, Supervisor, Edmonton Roman Catholic Separate School System District #7

Mr. Dennis Sharpe
Industrial Education teacher, Parkland County No. 31

Mr. Robert Ainscough
Industrial Education Department Head, Lethbridge Collegiate Institute, Lethbridge Public School Board

Mrs. Grace Melnyk
Vice Principal, W. P. Wagner, Edmonton

Mrs. Jean Moore
Consultant, Special Education, Alberta Education

Mr. Ray Harris
Work Experience Coordinator, Calgary Board of Education

Dr. Clarence Preitz
Professor, Industrial and Vocational Education, University of Alberta

Mrs. Linda Derman
Industrial Education teacher now in private industry

Photographs:
S. C. Sharma Media Services
Norreen Baker
Calgary Board of Education

Edmonton Separate School Board

Rod E. McConnell
Alberta Education

Production: J. D. Harder
Editor: Elizabeth McCardle
Artwork: Lenore Bell

373
1979
G.1
c.1

Alberta's Kids Backgrounder

Dr. Al Morris

We are going to tell others! This special edition of the Industrial Education Newsletter provides an explanation of the Alberta Education system and how Industrial Education has become an integral part. Alberta Industrial Educators were invited by the American Industrial Arts Association (AIAA) to make a presentation to their annual convention hosted in San Antonio, Texas. At this convention our delegates will share the Alberta's Kids Programs in industrial education with our American colleagues; what we wish to do in this newsletter is focus on some of the highlights with you.

One thousand eight hundred and nine miles north and a little west of San Antonio lies Edmonton, capital city of Alberta. Almost two-thirds of Alberta's 1,850,000 citizens live in cities, towns, and villages. Of these, 80% were born in Canada. Nearly half the others came from Great Britain or the United States. About 45% of the people have English, Irish, or Scottish ancestors. Other groups, in order of size, are those of German, Ukrainian, Scandinavian, French, Dutch, or Polish descent. Alberta has almost 28,500 native Indians, about 21,000 of whom live on reserves. The tribes include the Blackfoot,

sheep. From December to March, skiers skim down the mountain slopes. Throughout the province are special lodges for hikers. Many vacationers travel to northern Alberta to hunt bear, deer, elk and moose. They fish in the sparkling lakes and streams for grayling, trout, and pickerel. Tourists also marvel at the quiet splendor of Lake Louise, the intriguing geography of the Badlands, the excitement of the Calgary Stampede and the friendliness of Edmonton Klondike Days. Western hospitality is always present, and our visitors are always welcome.



Cree, Blood, and Peigan. Canada's largest groups of Hutterites, numbering 6,500, live in 65 communities in the province.

Sunny Alberta, the western prairie province of Canada, is visited yearly by millions of tourists. The most popular attractions are the majestic snow-capped Canadian Rockies along the province's western border. There lie three of Alberta's five national parks — Banff, Jasper, and Waterton Lakes. Tourists ride horseback through the spectacular scenery, and enjoy boating, golfing, and swimming. Mountain climbers face the challenge of jagged peaks, and sportsmen hunt mountain goats and

The geography of the province provides for a variety of activities and living conditions. From east to west the land changes from flat prairie land to rugged mountain terrain. The southern part of the province butts against Montana on the 49th parallel, and the northern boundary against the North West Territories, lies along the 60th parallel, approximately 760 miles from the U.S. boundary.

Alberta's fertile soil helps produce a variety of agricultural crops. Southern Alberta produces enormous quantities of wheat, the province's chief crop. This area also provides large crops of barley, flaxseed,

hay, oats, potatoes, rapeseed, and rye. Herds of beef cattle graze on the prairie ranches.

Alberta produces more than 80% of Canada's natural gas. More than 30 trillion cubic feet lie underground, most of it near the oil fields. Since the historic Leduc discovery in the late forties, many other oil fields have been identified. With the recent development of oil extraction from the tar sands, the economic activity in Alberta has soared.

The framework of our constitution, the British North America Act, was given assent by Queen Victoria in March of 1867. Starting in the same year with only four provinces, our Dominion has now grown to include ten provinces and two territories. Each province, in accordance with the Act, was guaranteed provincial control over natural resource administration, as well as jurisdiction in social and educational areas.

Provincial responsibility for education rests with the elected government of the province, which is directed by the premier and his cabinet ministers, one of whom is the Minister of Education, under whose authority and direction, Alberta Education regulates, monitors, and supervises education from kindergarten through the secondary grades within the province. (See "Organization for Education" for fuller description. Page 4).

In local jurisdictions such as school districts, divisions, or counties, educational matters are directed, within provincial guidelines, by elected officials. In divisions and districts these are school trustees, while in the county system, the education committee, formed from elected county counsellors and urban representatives, directs the education within its boundaries.

In many centres in the province two publicly supported systems operate side by side, the separation being based on religious grounds (i.e., Catholic and Protestant). In addition to these, a number of private schools provide educational experiences for those who desire something different from what is available in the two major systems. Private schools operate with less provincial funding, but in order to be accredited must teach the prescribed provincial curriculum and employ certificated teachers.

Alberta law requires all children between 7 and 15 years of age to attend school. The province has about 1,400 schools, 425,000 students, and 24,000 teachers. Almost all grade school teachers are members of the Alberta Teacher's Association, and by the year 1981 will be expected to possess the



minimum training requirement of a Bachelor of Education four-year degree.

The responsibility for post-secondary education rests with the Department of Advanced Education and Manpower. The four Alberta vocational training centres presently offer occupational upgrading programs funded in large measure by the federal government through Canada Manpower. Alberta's institutes of technology have developed in a way that makes them very different from colleges and universities. For the most part, their special character reflects the institutes' remarkable capacity

for anticipating and responding to Alberta's occupational requirements in technical fields.

Three of our nine colleges emphasize agricultural programs. The remaining six colleges provide a variety of programs with some transferability of credit to the advanced programs offered at the four provincial universities. Only our universities are chartered to grant degrees. The other institutions award diplomas and certificates.

The major purpose of the Alberta's Kids presentation is to identify the part industrial education plays in our educational system.

As we present more detail in each of the following sections, we hope that the industrial 'thread' will lead you to understand our "Kids."

- Elementary
 - Integrated Practical Activities
- Junior High
 - Multiple Activity Industrial Arts
- Senior High
 - Industrial Arts/Vocational Education
- Post Secondary
 - Vocational Centres
- Colleges
- Institutes
- Universities



Organization for Education

J. D. Harder

In Canada, education is a provincial responsibility. Basic education, (grades 1 - 12) in Alberta comes under the jurisdiction of the provincial Department of Education and is available to all Alberta children at no charge. Adult retraining and higher education come under the Department of Advanced Education and Manpower. Modest fees are charged for some higher education and adult retraining courses.

Elementary and Secondary Education

Elementary and secondary schools are operated by local school authorities under the general supervision of the provincial Department of Education. A School Foundation Program provides the basic cost of education. Approximately 75 percent of the foundation program's revenue comes from general provincial revenues, with the remaining 25 percent coming from property taxation in the commercial and industrial communities. Monies are distributed on a per-pupil basis with additional grants for student transportation, vocational education, special education, debt retirement and administration.

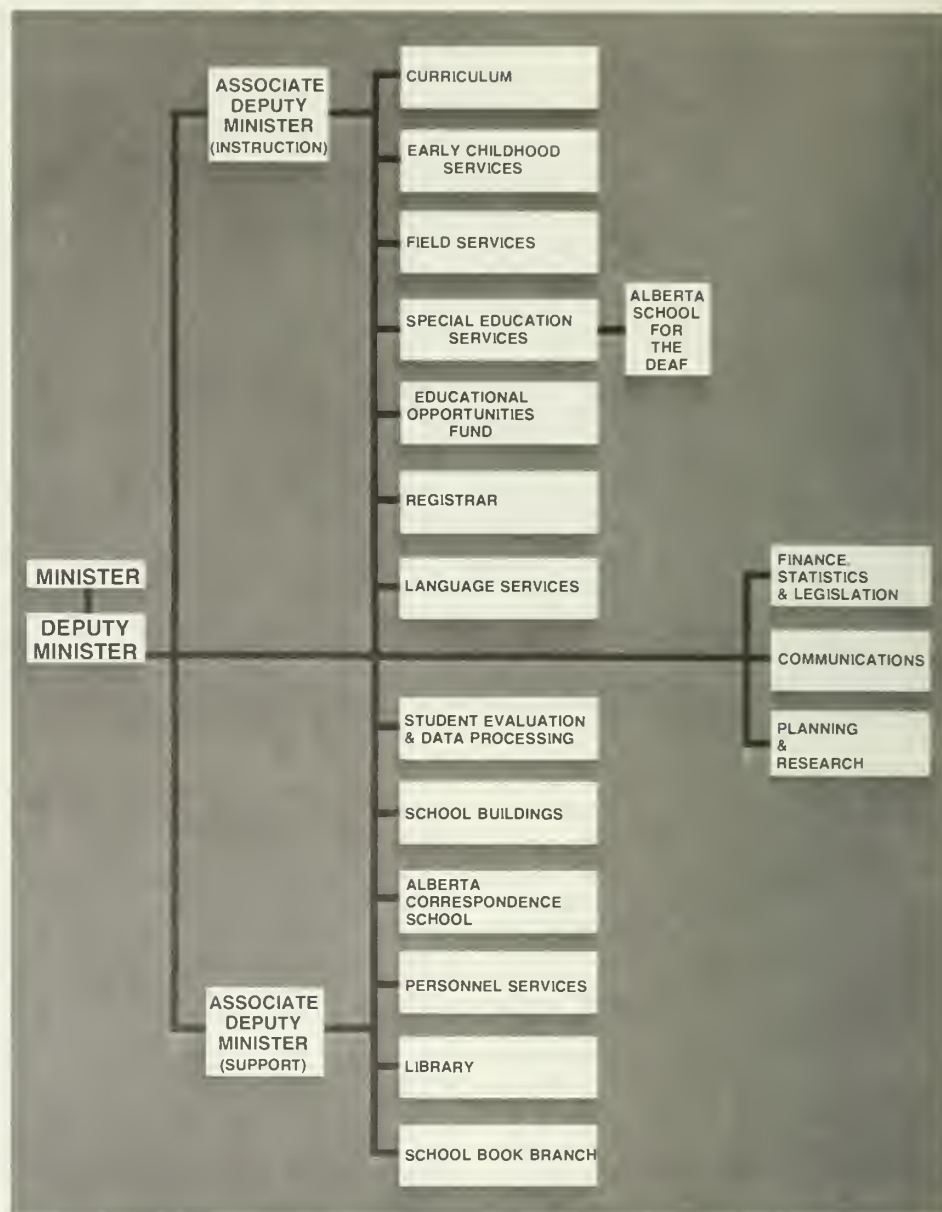
The Department of Education also operates an excellent correspondence school, and provides special education services and facilities for children who are handicapped or in need of special attention. A residential school in Edmonton offers education to deaf children between 5 and 18 years old. The provincial government also supports a community early childhood services program which involves parental participation in the use of school facilities.

Advanced Education

The advanced education system in Alberta is composed of the following types of institutions: public universities, provincial technical institutes; public, provincial and private colleges; provincial vocational centres; trade schools under government supervision; and other special schools.

University Education

The University of Alberta and the University of Calgary offer degree programs at the bachelor's, master's and doctorate levels, as well as professional studies in areas such as medicine, law and dentistry. The University of Lethbridge specializes in undergraduate degree programs, as well as one- and two-year professional transfer programs. College Universitaire Saint-Jean, on a separate campus but part of the University of Alberta, offers bilingual (French/English) undergraduate studies. Athabasca University, a new concept recently implemented, was



designed to offer part-time home study on a province-wide basis: there is no campus in the traditional sense, but central offices are located in Edmonton, and regional learning centres are found throughout Alberta.

College Education

Alberta has ten public colleges managed by Boards of Governors: Grande Prairie Regional College, Grant MacEwan Community College (Edmonton), Lethbridge Community College, Medicine Hat College, Mount Royal College (Calgary) and Red Deer College, Olds, Fairview, Keyano (Fort McMurray) and Lakeland (an interprovincial college centrally administered in Lloydminster.) These offer general education and community service courses, as well as one-year certificate and two-year diploma programs leading to vocational careers. Several provide university transfer courses.

Also, several non-profit private colleges affiliated for the most part with different

religious denominations, offer high school matriculation and university-transfer courses.

Technical/Vocational Education

Both the Northern Alberta Institute of Technology (NAIT) and the Southern Institute of Technology (SAIT) offer two-year technical, industrial, business and vocational programs, as well as apprenticeship training. SAIT incorporates the Alberta College of Art, which features one- to four-year programs in studies such as painting, sculpture and ceramics.

Technical vocational training aimed at developing occupational skills is available through Alberta Vocational Centres operating in Edmonton, Calgary, Lac La Biche and Grouard, as well as Community Vocational Centres. In addition to academic upgrading, these centres provide short and intensive employment-oriented courses, as well as basic English for immigrants.

Alberta also has about 65 private (registered) trade schools operating under government supervision.

Other Specialized Education

The Banff Centre (Banff School of Fine Arts) is a residential centre with a worldwide reputation for further education in visual and performing arts (music, drama, ballet, painting, etc.) Scheduled to operate on a year-round basis, the centre also has schools in management and environmental studies.

The Alberta Petroleum Industry Training Centre (Edmonton) through cooperation of the Canadian Association of Oilwell Drilling Contractors and the provincial government, provides specialized drilling-rig training at the technical level.

Adult Education

Most post secondary institutions have developed "mature admission" policies for persons who have been out of the educational system for several years and who do not meet normal admission requirements for regular programs. Many institutions also have extension or continuing education divisions which offer credit and non-credit courses on a part-time basis.

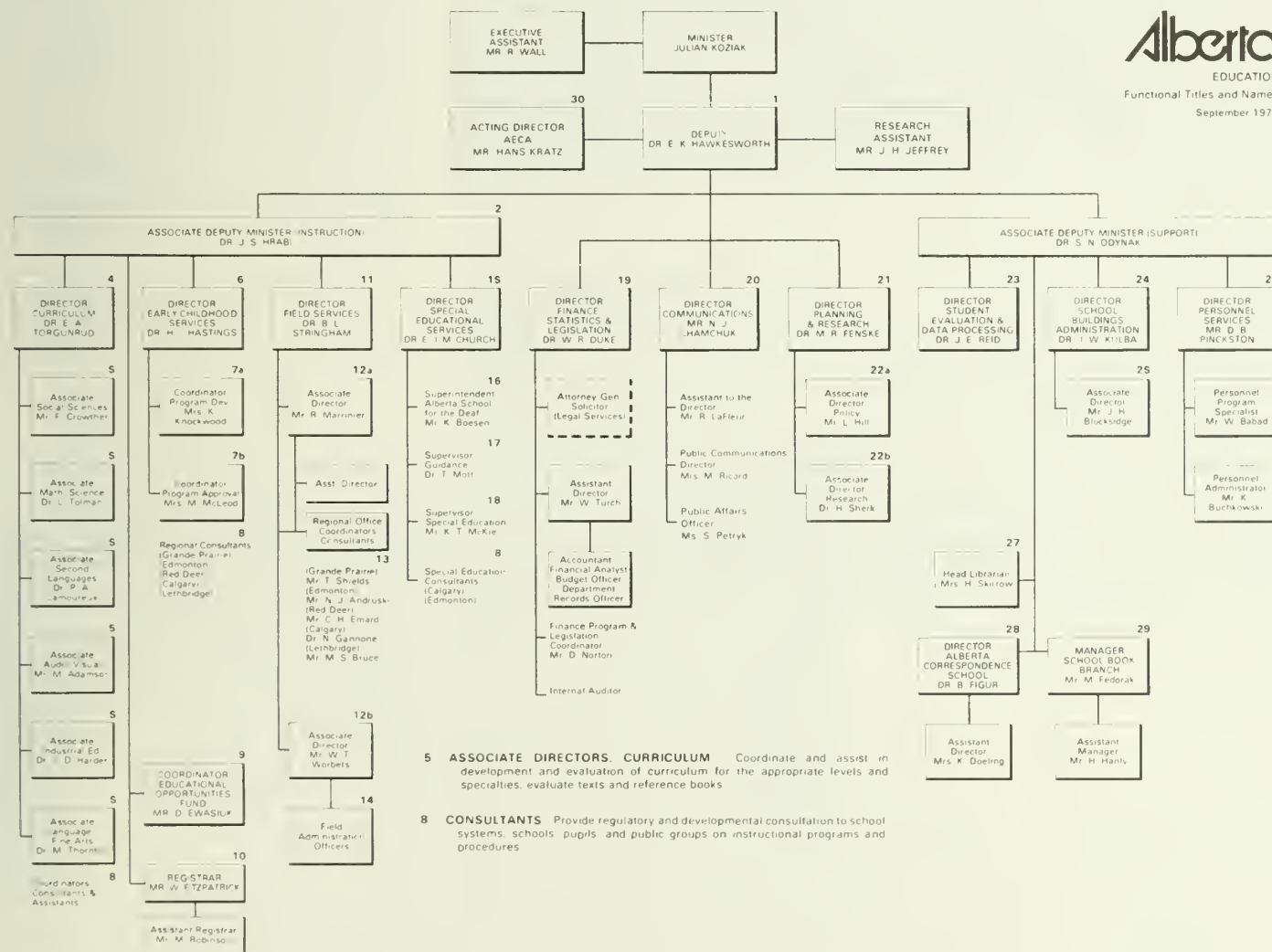
Alberta Advanced Education and Manpower has also been instrumental in establishing 80 local Further Education Councils which coordinate non-credit adult education, resources and support facilities in communities throughout the province.

Scholarship and Assistance Programs

In addition to privately sponsored

scholarships, a provincial Students Finance Board provides scholarships, grants, bursaries and provincial loans to Alberta residents requiring financial assistance to take credit courses. It also administers Canada Student Loans which are monies loaned by the federal government.

The province also administers the Vocational Rehabilitation of Disabled Persons and Alberta Vocational Training programs, under which persons may receive living allowances and vocational training. Finally, the tuition, travel and living expenses of apprentices are paid for by the provincial government during periods of classroom training.





Integrated Practical Activities

Norreen Baker
Jack C. Smith

Integrated practical activities is a teaching strategy emphasised at the elementary level. The major underlying philosophy of I.P.A. is that learning is most efficient and effective when students are actively engaged in the learning process. It is also an attempt to bridge the barriers between various subject disciplines and thereby introduce an integrative process.

Since I.P.A. is a strategy, there is no curriculum, nor is there specified content. Any activity that requires students to plan, construct or use tools and materials in their schooling can be considered part of I.P.A.

Schooling for Alberta's kids usually begins in Early Childhood Services (E.C.S.) classrooms. Early Childhood Services is a branch of the provincial Department of Education and is responsible for providing educational programs for children whose ages range from four and one half to eight years of age, as well as for children under that age who have some learning handicaps. The primary thrust of E.C.S. programs is directed at the kindergarten age child.

The idea that children need to talk, to listen, to explore and to touch, to see and to taste, means that they must be active participants in the learning process. What a change from the idea that an effective learning environment is quiet and all children are seated! Educational leaders have given us ample evidence that children "learn best by doing". In the literature on early childhood learning, it is stated that children learn a great amount through play. The use of learning centres is advocated to provide relevant activities to help children learn. A centre may be defined simply as a

place where children become involved in learning by doing.

The children must now play an important role in their education. At the Centres they must:

- become involved in decision making
- become aware of resources available
- become more independent in their thinking and work habits

- learn to follow projects through to completion
- become proficient in the safe use of equipment available
- learn to evaluate their own efforts.

I.P.A. is not intended to be a separate program, but rather a method to providing activity-centred learning. These activities are short in nature, provide instant reinforcement and lead the child into many learning discoveries.

Organization and implementation are very important in the successful outcome of I.P.A. strategies. Classroom teachers must develop educational goals as well as planned efficient work in learning areas.

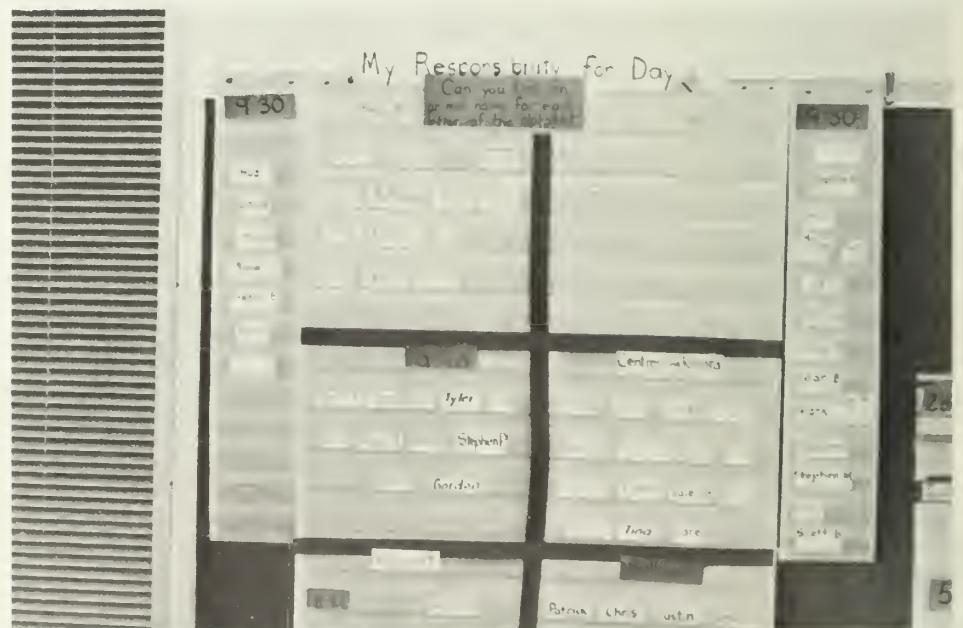
The *theme* approach is an effective way to integrate learning. I.P.A. themes are chosen by the teacher and students, usually on topics of interest which are close to the child's experimental world.

Once a theme has been selected, the next step is to consider the skills and concepts which should be developed through integrated practical activities, evolving around the theme topics. Usually an attempt is made to provide a variety of experiences within a theme study (e.g., creative writing, art, research writing, formal language art skills, building models, etc.).

A responsibility or choosing board is an effective way to allow primary children the choice in their learning activities, yet at the same time, guarantee that all aspects of curriculum will be met.

The centre could provide follow-up activities to a formal research project or it could be a motivator to get children

The following pictures illustrate some of the activities skills learned.



Sample Responsibility Board, indicating pupil choices plus formal lessons teacher directed.

interested in learning or trying more. Note the progression in skill from the readiness stage in the E.C.S. room of learning how to hold the hammer to the primary room where the tools are used to help make something. Process and product are becoming increasingly important.

Students in the upper elementary grades continue their independent work and study skills through the use of themes or centres. At this time many students will be developing sophisticated planning skills as well as skills at choosing and using appropriate tools. Given experiences like these at an early age, students will be better able to profit from and contribute to the technological world of which they are a part. Of major importance is the reinforcement that I.P.A. gives to the various concepts learned in different disciplines.

While the strategy has many positive elements, there are some problems with it. Problems related primarily to the teacher and the creation of a learning environment. Teachers must have definite educational aims and objectives for all activities. Careful planning is crucial to ensure that each child receives the basics as well as the opportunity to apply his newfound knowledge. Record keeping must be systematic yet simple. Teachers must be trained to use the I.P.A. approach. Parents must be shown that working with practical activities can indeed enhance the child's learning as much as pencil and paper activities. Equipment and a variety of materials must be made available to the children.

The strengths of the program include:

- children become more responsible for their own learning
- children play an active role in learning
- children are taught how to handle choice-making
- children can choose some of their activities, and as a consequence are better motivated
- children learn to allot their time more wisely
- children learn to share time, space, materials with others
- children learn!

In conclusion, a child's elementary school years can be rich with experience — experience with many tools, materials and processes as they become familiar with how tools can help in daily activities.

They:

- learn safety rules
- develop better eye-hand coordination
- have opportunities to build simple structures from a variety of materials

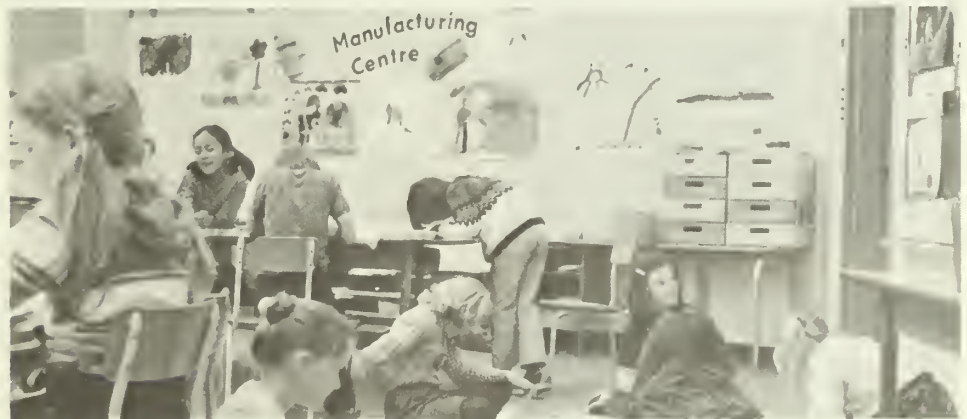
The student who has participated in an I.P.A. program should now be ready for the new and interesting challenges in the junior high school industrial education program.



The carpentry centre. Many skills are developed: e.g., lifting, sawing, hammering, eye-hand coordination, safety, planning and problem solving, sequencing, vocabulary, sharing, responsibility.



Activities of learning centres produce items that have much integrative potential: e.g., creativity, music, art, science, arithmetic. The socializing dimension is an important one.



Organizing and planning is crucial to a successful program.



The Alberta Industrial

Grades 7 -

Job



Throughout the first six years of formal schooling in the Province of Alberta, the student is offered many opportunities to learn through a "hands-on" approach. The Integrated Practical Activity strategy is often employed by teachers as a highly motivational and experiential method of reinforcing academic objectives in the elementary school. Thus, the typical child in elementary school learns to employ hand tools and create a product in the course of studying Mathematics, Language Arts, Science, and other pursuits. He enters the Junior High School with some awareness of Industrial Education principles.

explore many of the career fields open to him. It attempts to develop positive attitudes towards the dignity of work and the values necessary in a productive society. The Industrial Education Laboratory is an environment within which the student can synthesize his accumulated knowledge in the solution of practical problems and develop habits that will be conducive to the development of a safe and productive member of our industrial society.



Throughout the program, the skills of: measuring, identifying, planning, adjusting, evaluating, researching, interpreting, controlling, constructing, demonstrating, inventing, and a host of other meaningful life-skills are developed within the student. In addition to reinforcing academic skills, and fostering personal growth, Industrial Education in Alberta's Junior High Schools strives to meet other objectives. The multiple-activity program motivates the student to

Upon entering the Industrial Education Laboratory for the first time in Grade Seven, the student is faced with a well-organized environment structured to provide him with a wide array of exploratory learning experiences in a diversified group of technologies. The initial emphasis on safety in the laboratory is felt by the student on his first day in the program. His movement is restricted to a part of the lab that is devoted to instruction of a sedentary nature. The next four to ten hours will be spent learning the rudiments of the Industrial Education routine class procedures, the safety



FIELDS OF STUDY	MODULES (usually self-contained areas)
POWER TECHNOLOGY	POWER MECHANICS ELECTRICITY ELECTRONICS-COMPUTER
MATERIALS TECHNOLOGY	WOODS PLASTICS EARTHS (ceramics, concrete, etc.) LAPIDARY & ART METALS LEATHER & TEXTILES METALS
VISUAL COMMUNICATIONS	GRAPHICS (Gr. Arts) PHOTOGRAPHY DRAFTING
SYNTHESIZING	CONSUMERISM CONSTRUCTION MANUFACTURING STUDENT CONTRACTING DEVELOPMENTAL RESEARCH

Education Program (High)

re

regulations that will govern his behavior, and the nature of the facilities and equipment within the program.

During the initial teacher-guided tour of the laboratory, the student will learn that the facilities include self-contained areas, each equipped to enable him to study a MODULE in one of the four FIELDS OF STUDY. The chart (Page 8) will assist him in organizing these within his own mind.

In the next three years of schooling, the student will spend two hours each week in the Industrial Education Laboratory. During that time, he/she is expected to explore and obtain an awareness of at least three of the modules in each year. During the 12 weeks spent within a modular study area, the student will produce many take-home products and thus become familiar with a wide number of industrial processes.

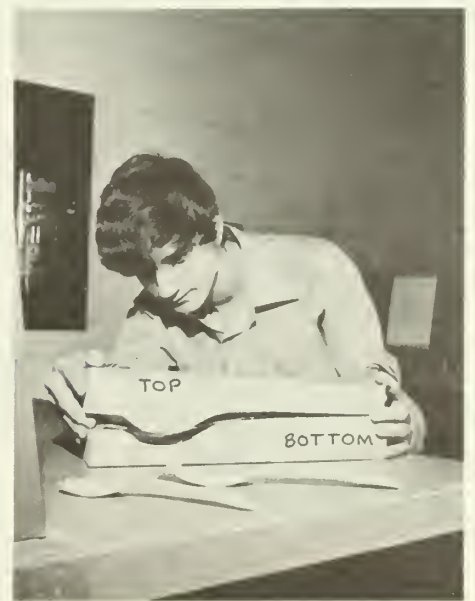
Within the module devoted to the study of PLASTICS, the student will: use a vacuum forming machine to produce a plastic bowl; use an injection molding machine to inject plastic to produce a product such as a pop-bottle storage cap; learn to use resins to produce such items as desk-pen sets, and may produce a football using a rotational molding machine. Safety is an integral aspect of all areas within the laboratory, and a study of plastics will include an awareness of the factors that can effect the worker's well-being. Thus the student is required to employ safe methods when working with materials such as catalyst, resins, acetone, methyl-acetate etc., and must be able to operate the equipment safely and correctly. Proper ventilation is mandatory, and personal protective equipment is provided near at hand. The equipment and materials used by the student in the exploration of the plastics field are located within the area devoted to that study. Instructional materials are diverse and comprehensive, since the Industrial Education Program employs a MULTIPLE-ACTIVITY teaching strategy and must be designed to enable the student to function through directed discovery methods while others in his class are proceeding on similar programs in many other modules of study simultaneously.

During an average Industrial Educational class, the teacher is in control of approximately 16-22 students functioning in perhaps four technological areas. It is vital

that the facilities and program be structured to enable intensive learning to be achieved within such diverse and simultaneous hands-on activity. A student organization teaches responsibility and also assists the teacher in maintaining good order and control of the program.

The Industrial Education Program at the Junior High School level in the Province of Alberta is exploratory in nature. Though a student is given the opportunity to operate the sign press, the offset press, the dark-room graphics equipment and other visual communication equipment within one of his selected modules, he is not expected to become a competent printer during the twelve weeks in the graphics area. More intensified vocational preparation and attainment of journeyman skills is left to programs at the High School and post-secondary levels. Industrial Education at the grade 7-9 level provides the student with an awareness and a level of skill within a wide spectrum of technologies, in order that the student may be better prepared to select a career in a vocation that may not yet have emerged in our society.

During a three-year Junior High Industrial Education program, the child will make perhaps 30 or 40 products requiring the safe and competent use of a number of machines and tools. He must be tested and authorized in the use of such machines as: the band-saw, metal lathe, milling machine, offset press, drill press, injection molding machine, oscilloscope, spot-welder, and many others. He must be able to safely work with potentially hazardous materials such as: gasoline, acetone, methyl-ethyl ketone peroxide, acids, and others. The teacher is the authorizing and testing person within the lab. While the curriculum is implemented throughout the Province of Alberta, the freedom of the instructor and student within the prescribed content is extensive. Teachers are free to develop new content and methods upon approval by the department. Government services and funding are available to teachers wishing to develop support literature or explore innovative areas or modules. Industrial Education in Alberta is dynamic and alive with such efforts. Thus, the junior high student in one region of Alberta receives an Industrial Education that differs from another region only to the extent permitted within the provincially applied curriculum guide.



The High School Program

Prior to becoming a province in 1905, Alberta was part of the North West Territories and upon becoming a province inherited 560 school districts and by 1906 28,784 students attended 628 schools throughout the province. In 1977, 423,314 students attended 1361 schools, and of these 100,943 were enrolled in high school grades.

In 1936, grade IX was removed from the high school program and placed with grades VII and VIII to form the junior high grades. High school then became grades X, XI, and XII. A distinctive feature of the new high school program was the introduction of the credit system.

The credit system made it mandatory for students to attend high school in order to graduate, as credits were tied to school instructional time. The credit system is still in operation today, with twenty-five hours of instruction equalling one credit. In order for students to graduate, with a high school diploma, they must successfully complete one hundred credits. These credits include fifteen credits in language arts, ten credits in social studies, five credits in mathematics and two credits in physical education. The remaining sixty-eight credits can be made up from studies in different subject areas. Students wishing to attend university or other post-secondary institutions must plan their high school programs carefully in order to comply with entrance requirements at the institution of their choice.

Students not bound for university may take programs or courses of a general or specific nature which will help them reach their personal educational goals. There are two routes to choose from in industrial education. One, the 10-20-30 program, is general in nature, while the other, the 12-22-32 program, is vocationally oriented. Students may select courses from either route as prerequisites and class schedules allow.

The Alberta Industrial Education Program

10-20-30 (Sr. High)

Dennis Sharpe

This program focuses on the exploration of, and orientation to, a wide variety of career choices. It is not a vocational program where the emphasis is on career development and occupational content, neither is it concerned with business education. Industrial Education 10-20-30 uses a multi-activity lab approach. These labs vary in size across the province and are equipped for modules in a variety of career fields.

The program has three main objectives, as listed by Alberta Education:

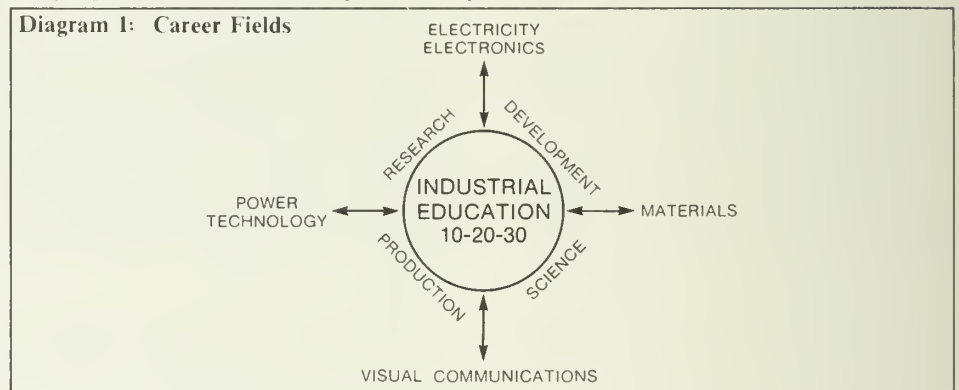
1. **Personal Growth** which provides opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.
2. **Career Exploration** to provide the student with experiences which will assist in making realistic career choices.
3. **Occupational Skills** which develop basic competencies, integrating cognitive and psychomotor skills to enter a family of occupations or post-secondary institutions for further education.

It is an elective program which fits into a continuum of experiences that may begin at the elementary level with the familiarization of materials and tools, and which may continue with apprenticeship training after the student leaves school.

The career fields are structured through 56 modules, including those of a more general nature in Research, Development and Production Science. Examples of modules in Visual Communications are:

- Offset Lithography
- Line Photography
- Black & White Photography
- Colour Photography
- Screened Photography

The program is divided into the four career fields shown below:

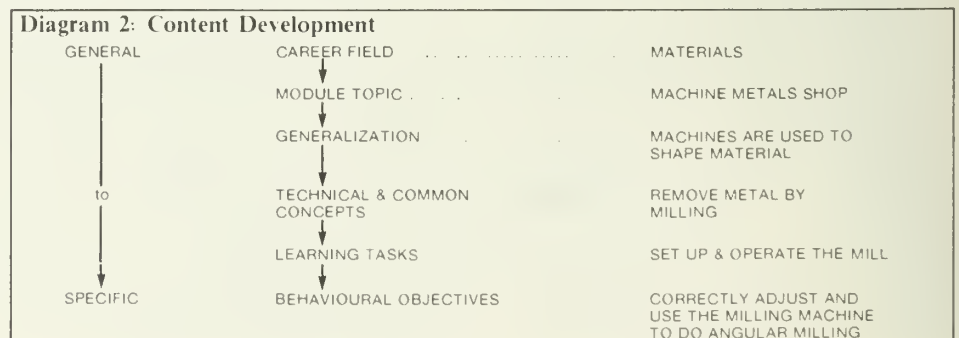


- Layout & Design
- Offset Printing
- Mechanical Drafting
- Topographical Drafting
- Architectural Drafting
- Relief Printing
- Print Machine Techniques

Each module has a value of one credit to a high school student and consists of 25 to 33 hours of work. Four or five modules totalling 125 hours of study would give the student five credits. A total of 30 credits (750

hours) out of a total required minimum of 100 credits (2500 hours) for graduation are available to students through Industrial Education in many high schools. Some students may choose to take only enough modules for four or five credits (100 - 125 hours) while others would take the maximum possible for 30 credits (750 hours).

The content of the modules is developed into a series of behavioural objectives as illustrated below:



The module content as defined in the Alberta Industrial Education curriculum guides allows much local flexibility according to equipment available, student teacher interests and the school situation. Many diverse programs guided by common curriculum concepts are prevalent in Alberta.

Labs are organized on the basis of the modules to be taught. They often contain a number of distinct areas such as foundry, welding, machine metals, hydraulics and woodworking in which one or more modules of content may be taught. It should be noted that vocational shops can be utilized to teach some of the Industrial Education 10-20-30 program modules, but the reverse is not feasible: Vocational Education does not fit in a multi-activity lab.

Within the modules, students work with a wide variety of tools and equipment and complete learning tasks and experiences in the achievement of specific behavioural objectives in the cognitive, affective and psychomotor domains. Projects are utilized as a learning medium, and are as diverse as teacher student imagination, time, funds and practicality allow. More complex equipment is utilized at this level compared to the junior high exploratory experiences of the student.

An integral part of the learning process in all modules is the use of software such as programmed pictorial instruction books (PPI's), project diagrams and worksheets. These help to individualize the instructions and allow the teacher to concentrate on the students requiring more help. Most labs also contain a conference area in which are located a variety of reference books, workshop manuals, audio-visual material and models for the student to utilize in the program.

Safety is a key concept in the lab. Safe working conditions such as ventilation fans in the welding and engine rooms and non-skid paint surfaces around machines are prevalent. Students are required to wear the appropriate protective clothing as well as eye protection, depending upon the machine or process on which they are working. Machines are equipped with the required guards and safety switches.

Many teachers use a student organization to help enforce safety and to promote student co-operation, leadership and responsibility. A typical example is shown in Diagram 3.

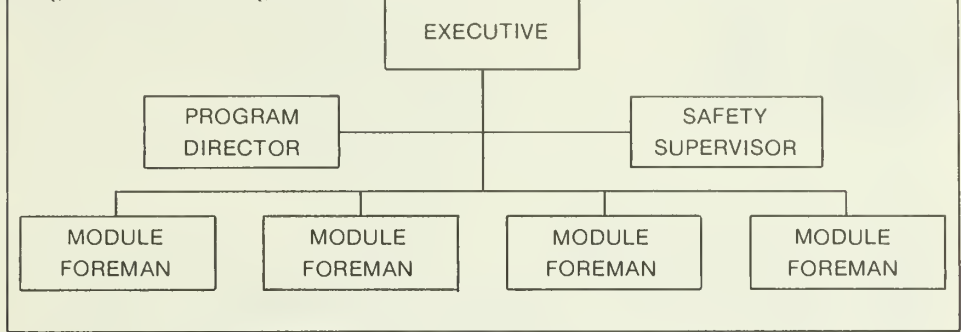
Each person in the executive has specific tasks and duties to perform during each lesson in the lab.

Student evaluation is an important part of the program and utilizes the categories of:

1. VERBAL & WRITTEN COMMUNICATION
2. PERSONAL GROWTH
3. MANIPULATIVE SKILLS

Individual teachers will vary the emphasis in

Diagram 3: Student Organization



each of these categories, depending on the actual module content of the program, and in many instances will allow for student self evaluation.

Industrial Education teachers are guided in their effort by a number of Alberta Government Education Department publications. The curriculum guides are flexible enough to allow laboratories throughout the province to adapt the type and content of the modules to suit local requirements, interests and capabilities. Programs are being continuously revised, developed and upgraded within budgetary limitations.

It should be emphasized that the Industrial Education 10-20-30 program does not exist in isolation. It is preceded by

elementary and junior high experiences and may be used in part as an introduction to the Industrial Education 12-22-32 vocational program if facilities exist and if the student decides to specialize.

The Industrial Education 10-20-30 program attempts to examine the many facets of Alberta's diverse industries and in doing so, provide the student with exploratory experiences in a variety of career fields which hopefully will be utilized in his future career decisions.

The matrix next page lists all the modules available in the program. The teacher and students have the option of putting modules together in a sequence which can provide concentration in a career field or cut across a number of career fields.





Industrial Education 10, 20, 30 Matrix

(Each module is 25 to 33 hours in length)

CAREER FIELD

A. Electricity-Electronics

1. Electricity
2. Electronics
3. Power Supplies
4. Amplifiers
5. Audio
6. Servicing
7. Radio
8. Television
9. Logic Circuits
10. Computer
11. Electric Wiring
12. Design and Construction

B. Materials

1. General Woods
2. Building Construction I
3. Building Construction II
4. Cabinet Making I
5. Cabinet Making II
6. General Metals
7. Sheet Metal
8. Machine Shop
9. Welding Arc
10. Welding Gas
11. Foundry
12. Plastics I
13. Plastics II
14. Earths Ceramics
15. Earths Concrete
16. Textiles
17. Foods

C. Power Technology

1. Conventional Heat Engines
2. Small Engine Tune-Up
3. Small Engine Overhaul
4. Automobile Care
5. Automobile Tune-Up
6. Mechanical Systems
7. Electro-Mechanical Controls
8. Electrical Systems
9. Nonconventional Power Sources
10. Appliance Repairs
11. Hydraulics and Fluidics
12. Pneumatics and Fluidics

D. Visual Communications

1. Offset Lithography
2. Line Photography
3. Black and White Photography
4. Color Photography
5. Screened Photography
6. Layout and Design
7. Offset and Printing Production
8. Mechanical Drafting
9. Topographical Drafting
10. Architectural Drafting
11. Relief Printing
12. Print-machine Techniques

E. General Modules

1. Developmental
2. Research
3. Production Science

The Alberta Industrial Education Program

12-22-32 (High School)

J. C. Smith
Bob Ainscough

The industrial education 12-22-32 series (also the 15-25-35 series) of courses is much more vocational in nature than the 10-20-30 program.

Historically, high school industrial education programs started in 1900 with the introduction of manual training which was funded to a large extent by Sir William Macdonald, a wealthy Canadian tobacco manufacturer. He provided one and one-half million dollars to train manual training teachers across Canada. One outcome was that manual training in Alberta (then in the North West Territories) got off to a good start. The courses at that time were mostly woodworking and blacksmithing. Later, the courses offered included woodwork, metalwork, electricity, automotives, arts and crafts, mechanical drawing and printing.

These programs were articulated with provincial apprenticeship programs and programs offered by the provincial Institute of Technology and Art. Under this arrangement, students who had been taught by a journeyman at the high school level and had completed the course were eligible to write the first year apprenticeship examination. If they passed it, they could be granted one year of credit toward their apprenticeship.

A major upheaval took place in 1961, when the Canadian government stepped into the educational picture by offering vocational education faculty grants. Early in 1961, the Technical and Vocational Training Agreement between the province and the Government of Canada was signed. Under this agreement, the federal government paid

for 75% of the cost of providing vocational education facilities and equipment, while the province paid for 25%. This provided a tremendous impetus to vocational education in the province, which came at a time of rapid student population growth.

The federal government withdrew from participation in 1967 and the province has continued to maintain the policy originally set. Courses were established in autobody, automotives, beauty culture, building construction, commercial art, drafting, electricity electronics, food preparation, graphic arts, machine shop, pipe trades, sheet metal and welding. The grade ten year was explanatory but the following years (22 and 32 level) were directed specifically at trade skill developments. Initially students were required to enrol for 15 credits in each of the senior level courses (22 and 32).

This arrangement forced students into career choice patterns after the grade ten year as they had to commit themselves to a vocational or academic program. This proved unworkable for a number of students, and consequently, in 1970, the vocational program was organized on the basis of five credit modules. This arrangement provided much greater flexibility and choice. At the same time, courses were organized into career fields. These career fields, and the courses within them, are shown on the industrial education matrix.

A number of these vocational programs have been designed to articulate with the provincial apprenticeship system. Students in these courses who successfully complete

thirty-five credits in a trade area, are able to qualify for a shortened apprenticeship, (approximately one-quarter shorter). This could mean a reduction of up to twelve months from a forty-eight month apprenticeship. After apprenticeship, journeyman's status and provincial licensing may be attained. Students in beauty culture can complete while in high school, the 1400 hours of training required for provincial certification. A similar arrangement exists for food preparation students.

In each vocational area, teachers must have journeyman or equivalent status and additional trade experience as well as having a teaching certificate (at present, three years of university training). As a consequence, these teachers are amongst the most highly qualified at the secondary level.

Special funding by the province for senior vocational courses is maintained. This support, paid to local jurisdictions, is based on the number of credits for which students have enrolled in 22 and 32 modules. These funds help maintain the laboratories and equipment. In addition, an upgrading program is under development which will help maintain program and facility currency.

At the present time, forty Alberta high schools offer vocational courses, and of these thirty-two can be considered as having a major vocational component. Twenty-four comprehensive high schools equipped to offer the vocational program are located in large urban centres, while the remaining sixteen are located in rural towns or smaller cities.



Industrial Education Matrix

CAREER DEVELOPMENT COURSES

1. Exploratory Courses	2. Career Field	3. Industrial Education Introductory	4. Industrial Education Major	5. Industrial Education Minor	6. Related
Industrial Education and Home Economics at the Junior High School Level.	Visual Communications	Drafting 12 Visual Communications 12 Industrial Education 10	Drafting Graphic Arts Commercial Art	See Charts p.p. Drafting Commercial Art Graphic Art Performing Arts	Work Experience Industrial Ed. Business Ed.
	Mechanics	Mechanics 12	Automotives	Welding, Drafting, Machine Shop, Electricity, Auto Body Aircraft Maintenance	Work Experience Industrial Ed. Business Ed.
		Industrial Education 10	Aircraft Maintenance	Drafting, Welding, Machine Shop, Bldg. Const., Electricity Auto Body, Automotives	
		Auto Body 12	Related Mechanics Auto Body	Drafting Welding, Sheet Metal, Machine Aircraft Maintenance Automotives	
	Construction and Fabrication	Industrial Education 10 Building Const. 12	Building Construction	Drafting, Electricity, Sheet Metal, Piping, Machine Shop Welding	Work Experience Industrial Ed. Business Ed.
		Machine Shop 12	Machine Shop	Drafting, Welding, Sheet Metal Bldg. Const., Piping, Automotives, Auto Body	
		Welding 12	Welding	Drafting, Machine Shop, Auto, Auto Body, Sheet Metal, Piping Bldg. Construction	
		Piping 12	Piping	Drafting, Bldg. Const., Machine Shop, Welding, Electricity, Sheet Metal	
		Sheet Metal 12	Sheet Metal	Drafting, Bldg., Const., Machine Shop, Welding, Electricity, Piping	
	Electricity-Electronics	Electricity-Electronics 12	Electricity	Drafting, Automotives, Bldg. Const., Electronics	Work Experience Industrial Ed.
Industrial Education 10		Electronics	Drafting, Automotives, Bldg. Const., Electricity		
Personal Services	Industrial Ed. 10	Beauty Culture	Beauty Culture	Fashion & Furnishings, Health Services, Food Preparation, Visual Communications, Commercial Art Beauty Culture, Visual Communications, Commercial Art Beauty Culture, Fashion &	Work Experience Industrial Ed. Business Ed. Home Economics Arts & Crafts
	Beauty Culture 12 Home Economics Fashion & Furnishings				
	Food Preparation Health Services 12	Food Preparation Health Services	Food Preparation Health Services	Fashion & Furnishings, Health Services, Visual Communications, Commercial Art. Beauty Culture, Food Preparation, Fashion & Furnishings	
Performing Arts		Performing Arts	Performing Arts	T.V. Crafts, Drafting, Fashion & Fabrics, Bldg. Const., Drafting, Electricity, Performing Arts, Welding	Work Experience Industrial Ed. Business Ed.
Horticulture	Horticulture 12 Land and Life	Horticulture	Horticulture	Drafting, Automotives Drafting, Automotives	Work Experience Industrial Ed. Business Ed.

Special Programs in Vocational Education

Grace Melnyk

In order to accommodate those students who have a learning problem and cannot successfully complete a regular vocational program, several schools in Alberta provide special vocational training for the slower student. Van Horne School in Calgary provides a four year program beginning in Grade 8 and covering a number of trade areas. Shaughnessy School in Calgary has a three year program beginning in Grade 9. Edmonton has special vocational programs in two special schools: at L. Y. Cairns School, students who are educable but whose I.Q. scores do not exceed 75, can enroll in a six year program leading directly to employment in a limited group of service and trade areas. Students who are having some difficulty in academic programs but are vocationally oriented can enroll in a three year trade and service program at W. P. Wagner School. The curriculum in this school constitutes an integration of academic instruction, cultural enrichment, physical conditioning, personal development and vocational preparation.

Following is a description of the Wagner program which is representative of the other schools in the same category. Approximately one-half of the school time is devoted to improving the basic educational background of the student. Since adequate preparation for living usually demands reasonable competence in speaking, reading, writing, spelling and computation, all students are encouraged to develop such fundamental skills to the fullest extent of their ability through meaningful practice and application.

During YEAR ONE, the student is given an opportunity to discover his special interests by exploring six different varieties

of vocational fields. At the end of the exploratory program, students are counselled in selecting one from a number of the vocational clusters in the YEAR TWO program. This choice is governed largely by the degree of aptitude and interest shown by the student. In YEAR THREE students take more advanced and specialized training in the specific area of their choice.

At YEAR TWO and YEAR THREE levels a work study program outside the school, and OFF CAMPUS projects

provide students with a "real" experience in a working environment.

Graduates from W. P. Wagner School may proceed into apprenticeship programs or seek further training in provincial technical institutions. Most are employed immediately upon graduation from the school. The success of the program is verified by the fact that applications to the school exceed the number of spaces available although enrollments in regular high school programs are declining.



Living Vocational Skills

Jean Moore

Special education curriculum development in Alberta includes living-vocational skills for all handicap areas. At the present time these include the dependent handicapped, trainable mentally handicapped, educable mentally handicapped, hearing impaired and visually impaired. Living-vocational skills are those which enable the student to cope with his or her environment; they also enable him to work towards maximizing his potential.

The philosophy on which the curriculum is based determines the approaches to be

used. Curriculum must be child-centered rather than subject-centered. Parent involvement is viewed as an essential component. The school and the home must work cooperatively to achieve the goals of education. The curriculum has a community focus which emphasizes the extension of the classroom into the community. Resources unavailable in the schools may be accessed in the community. This includes people with specialized skills; the community also provides a wide variety of work stations.

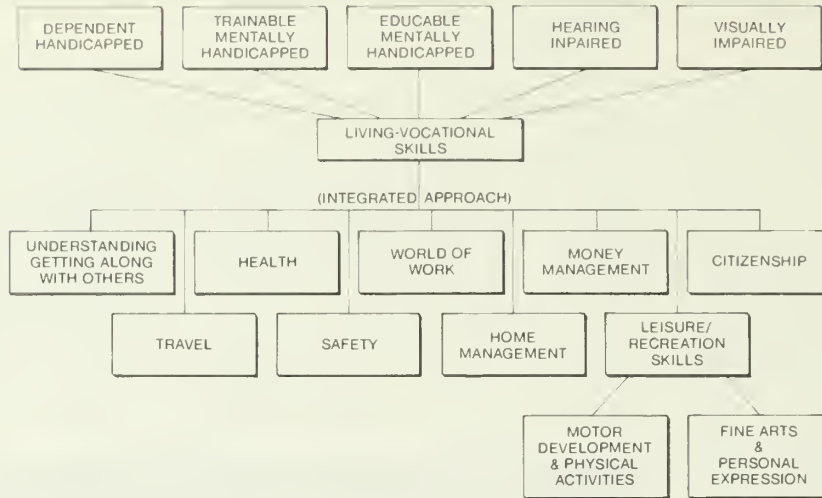
The major topics included in living-

vocational skills are shown in Figure 1. The emphasis on each topic will vary with the handicap served.

Living-vocational skills emphasize an integrated approach to education. The preferred method of integration (Figures 2 and 3) utilizes practical applications to make skills more meaningful for students who are handicapped. With this approach, skills are not compartmentalized, but become an integral part of the activity as they will when the student leaves school and applies the skills he has learned.

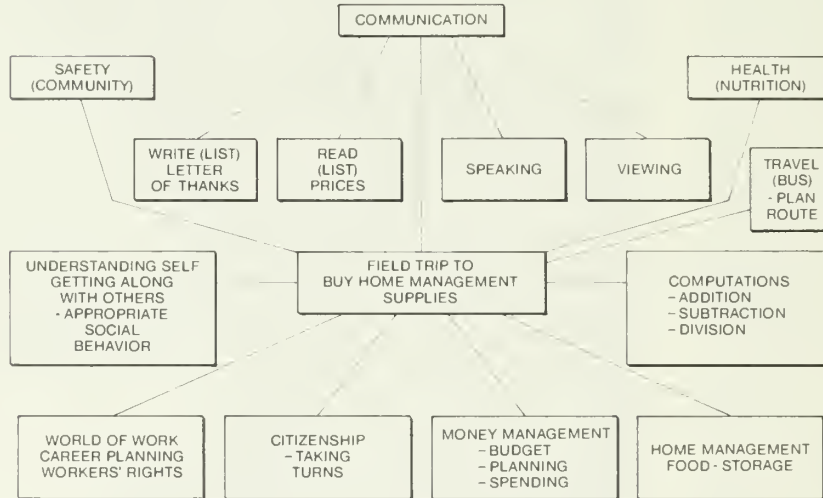
(Figure 1)

Special Education Curriculum Development



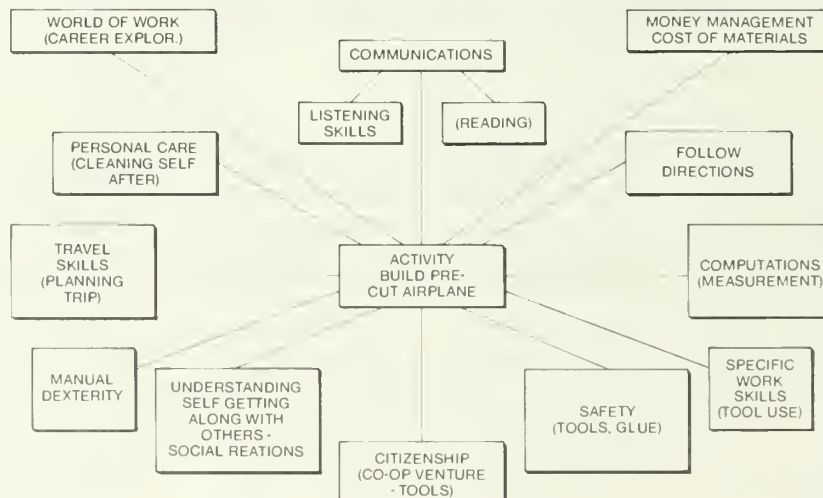
(Figure 2)

Integrated Approach To Curriculum



(Figure 3)

Integrated Approach To Curriculum



Work Experience Education in Alberta

Ray Harris

Work Experience became a part of the high school credit program in 1970. It enables high school students to participate in and observe work activities in an area of their choice while attending high school. Students are introduced to a wide variety of sophisticated equipment and expertise that exists in the community. The community becomes an extension of the school and the instructors in business and industry become teachers in the broad sense.

It is this unique assembly of school, business, industry, professional and labor partners of the community who combine to provide opportunities for the students of the Province of Alberta. These students can explore career interests and test skills which their schooling has provided. Work Experience is the broad term under which exist two specific areas. Work Experience 25/35 refers to employment undertaken as an integral part of a planned school course which is under the cooperative supervision of a teacher coordinator and the employer. There are two courses, Work Experience 25 and Work Experience 35. Students may obtain five high school credits in each of these two courses for completing a minimum of 125 hours in each.

Work Experience 25/35 can be exploratory whereby students may divide their time between several different occupations, or a student may spend all his time with one employer.

Work Study permits no additional high school credits, consequently no specific employment time is required. Work Study is flexible and can be adjusted to meet local school needs.

Work Experience education attempts to complete the link between the school and the world of work for the student.

The flexibility of Work Experience permits adaptation by school districts to each of their high schools (whether it be emphasis on exploratory aspects of Work Experience or emphasis on occupational training). Size of the school district usually dictates the program organization and staffing, whether it will be handled centrally or each school operating individually with its own teacher coordinator.

The teacher coordinator at each school is the keystone of the program. He or she must help the students as they select the type of work. He must prepare them for employment entry by means of orientation sessions which include job interview techniques, occupational dress standards and job behaviour. During the period of student employment he will visit the student and

employer, discuss learning, personal growth, attitudes and problems. In concert with the employer's evaluation, the teacher coordinator assigns the Work Experience student's mark evaluation.

Students and employers are protected by a contract signed by the parents, student, employer and an authorized representative of the school district. The contract assures Workers' Compensation to the student in the event of an accident. Employers do not collect any Workers' Compensation assessments; these are paid by the province. The contract also waives minimum hourly wage as governed by the Board of Industrial Relations.

Remuneration by employers is decided individually by each school district. It can be "no pay" depending on budget constraints of the particular organization or up to the established minimum hourly rate.

Alberta Education Guidelines

1. Each school board must first approve the program.
2. Application for approval of each school's program must be made annually and must be approved by a representative of that department.
3. At least one teacher coordinator must be appointed in each school.
4. Student working hours are limited to any time between 8:00 a.m. and 6:00 p.m. on regularly scheduled school days.
5. In-school Work Experience, although not recommended, may be permitted in a school other than the student's home school, and at another level.
6. Work Experience programs normally associated with a young person under the Alberta Labor Act means a person over 15 years of age.



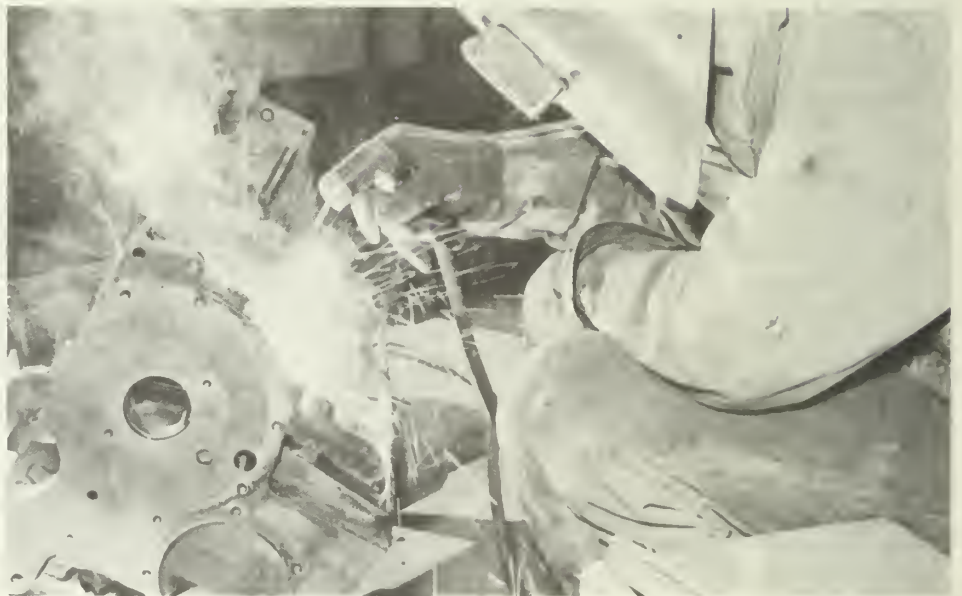


7. Work Experience students must not displace any regular part-time or full time employees. A ratio of one student per semester may be employed at a work station whose employees number from 1 to 5.

- two students per semester from 6 - 10 employees
- three students per semester from 11 - 15 employees
- four students per semester from 16 - 20 employees
- five students per semester from 21 - 25 employees
- where work force exceeds 25 employees the number of students per semester should not exceed 15% of the work force.

At present vocational and business education students are the main groups of students seeking school experience. There has however, in the past two years been a noticeable trend of students seeking Work Experience in other areas; for example, child care, health receptionists, travel agents, the media, banking and commercial art.

Students in the province are enrolling in Work Experience in increasing numbers to explore the world of work, and to test school-developed skills under the guidance of the school and the business sector of the community. Work Experience may help the student to make or change career decisions without the added investment of time and financial resources when leaving high school.



Professional Organizations

by Clarence Preitz
Linda Derman

A number of organizations have developed in Canada to further the objectives of Industrial Education and Vocational Education. In each case, the organization has been formed to establish communication among those engaged in local, regional or national programs. Three organizations, two national and two provincial (Alberta) will be briefly dealt with. These are:

1. The Canadian Vocational Association
2. The Canadian Industrial Arts Association
3. The Industrial Education Council of the Alberta Teachers' Association.

The Canadian Vocational Association was formed by the Directors of Vocational Education from each province to promote and coordinate a system of technical and vocational education in Canada.

The origin of the CVA was clearly stated at the first national convention held in Montreal on May 7, 8 and 9, 1964 by the retiring president J. Arnold Doyle.

"The CVA came into being as the Canadian counterpart of the American Vocational Association, largely through the interests and efforts of those Canadians who had regularly attended the annual meetings of the AVA."

The Canadian Industrial Arts Association was formed in 1964 with the objective of acting as a clearing house, collecting and distributing ideas and new programs.

The Industrial Education Council of the Alberta Teachers' Association was formed under the professional development program of the ATA.

Reference:

Professional Development Organization Structure (1965) as outlined by Dr. E. Ingram, Alberta Teachers' Association.

The Indec was formed in 1960. The objective of the council is to increase the members' knowledge and understanding in the field of industrial education.

The council is meeting this objective by:

1. publication of bulletins and newsletters
2. through provincial and regional council seminars
3. through the establishment of regional councils.

Epsilon Pi Tau

Epsilon Pi Tau is an international honorary professional fraternity for those teachers of outstanding scholastic ability in the teaching specializations of Industrial Arts Education, and/or Industrial Vocational Education and highly selected leaders from industry. Included under the term Vocational Education is Business Education.

As a **Scholastic Fraternity**, the fraternity does not have, nor does it support, the paraphernalia or trappings of a social fraternity such as specially worn jackets or a fraternity house. The only identifying insignia of the fraternity is a membership key which is an equilateral gold triangle whose sides are inscribed with the Greek names of the three precepts of the fraternity. These are: **Skill** or **Texnikh**, **Social** and **Professional Proficiency** or **PRAGMATEIA**, and **Research** or **EXETASIS**.

In the structure of **EPSILON PI TAU** there are two types of chapter: campus

chapters and field chapter. These chapters are administered by elected officers, a trustee, and one or more co-trustees. Officers are elected from the membership-at-large of the chapter.

Omicron Field Chapter was granted its charter as a chapter of Epsilon Pi Tau, January 1971. The charter for the chapter was granted by Dr. Delmar Olson, then Executive Secretary of the fraternity.

Omicron Field Chapter is for the Province of Alberta and is administered by Dr. C. H. Preitz, Trustee, with Mr. A. A. Day as Co-Trustee. This field chapter is administered from the Department of Industrial and Vocational Education, The University of Alberta with the assistance of an executive elected from the membership.

The field chapter is divided into two regionals. The Northern Regional serves the area north of Red Deer to the northern

border of Alberta. The area south of Red Deer to the southern border of the province is served by the Southern Regional. Although each regional is autonomous with an executive elected from the membership of the region; both regionals are under the administrative guidance of the trustee. The vice-president for each regional is a member of the executive of the chapter.

The International Office is located at Bowling Green State University, Bowling Green, Ohio. Dr. Jerry Streichler is the Executive Secretary of the Fraternity. The affairs of the fraternity are exercised, conducted, and controlled by a Board of Directors. Each member of the Board of Directors is elected by three-fourths vote of the region concerned, for a three-year staggered term.

Dr. Preitz serves on the Board of Directors for the International Region of the fraternity.

Where To NOW?

J. D. Harder

Western societies have moved rapidly into the cra of knowledge explosion. In this movement many have been shell-shocked. The mass of information, studies, reports are just too much: the people are turned off. They find more pleasure in doing things for themselves — they move to the conservator society — do with less but enjoy it more. There is a seeking for some control over one's own time and destiny.

The outcome of this adjustment of values will put more emphasis on learning skills that will be helpful for survival. A trend to

vocational manual skills as taught in vocational schools, institutes of technology and community colleges has been evident for several years. Conversely, enrolments in universities have stagnated or fallen. This trend is influencing the selection of courses for high school programs. Enrolments in the Practical Arts courses, (Industrial Arts, Vocational Ed., Business Ed., Home Ec.) are growing steadily. This will continue for the next two decades even though the high school population will decrease during the first ten years. By the year 2000 the

pendulum will begin to swing back in favour of the academics.

During the next decade then, we can expect pressure on the Practical Arts for more student places, and content that is relevant to the job requirements. There will be continuing growth of the community school concept with students spending part time working in school supervised community work stations. In like fashion workers in the community will enrol in formal school programs.



T 77 A3 A33 1979 GR-1-12
INDUSTRIAL EDUCATION AND ALBERTA
KIDS SPECIAL EDITION --

39881025 CURR HIST



T 77 A3 A33 1979 gr. 1-12
Industrial education & Alberta
kids :

39881025 CURR HIST

CURRICULUM GUIDE

For Reference

NOT TO BE TAKEN FROM THIS ROOM

EXCISE MARK

